



Caerus

Well Name: NPR 24A-3-596

API #: 05-045-23999

Job Type: Surface

Date Job Completed: 04/01/2019

Quote #: QUO-29142

Execution #: EXC-16870



Caerus

Attention: Mr. Steve Schmitz | (720) 880-6412 | sschmitz@caerusoilandgas.com

Caerus | 1001 17th Street, Suite 1600 | Denver, CO 80202

Dear Mr. Schmitz,

Thank you for the opportunity to provide cementing services on this well. BJ Services strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact BJ Services at any time.

Sincerely,

Zen Keith
Field Engineer III | (307) 757-7178 | Zen.Keith@BJServices.com

Field Office 28730 US-6, Rifle, CO 81650
Phone: (970) 632-2412

Sales Office 999 18th St. Suite 1200 Denver, CO 80202
Phone: (281) 408-2361

BJ Cementing Treatment Report

SERVICE SUPERVISOR	Douglas Diaz	FORMATION	
CLIENT FIELD REPRESENTATIVE	George Urban	RIG	H&P 330
DISTRICT	Rifle, CO	COUNTY	GARFIELD
SERVICE	Cementing	STATE / PROVINCE	CO

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	EXCESS (%)	GRADE	THREAD
Previous Casing	19.50	20.00	52.73	130.00			
Open Hole	14.75			2,863.00			
Casing	8.92	9.63	36.00	2,842.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,797.00
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3520.00
Top Plug Size	9.630	Max Casing Pressure - Operated (psi)	2816.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	5.00	Job Pumped Through	Manifold
Centralizers Type	Rigid	Top Connection Thread	8 RND
Landing Collar Depth (ft)	2,797	Top Connection Size	9.63

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End Date: 4/1/2019

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CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	10
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	30.00	10 sec SGS	4
Circulation Rate (bpm)	7.00	10 min SGS	12
Circulation Volume (bbls)	220.00	30 min SGS	18
Lost Circulation Prior to Cement Job	Yes	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	8.95	Gas Present	No
PV Mud In	13	Gas Units	

TEMPERATURE

Ambient Temperature (°F)	56.00	Slurry Cement Temperature (°F)	82.00
Mix Water Temperature (°F)	52.00	Flow Line Temperature (°F)	

FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H ₂ O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer / Pre Flush / Flush	Water	8.3300			0.00				20.0000
Lead Slurry	BJCem S100.3.01D	12.0000	2.5298	14.86	0.00	2,500.00	719	1818.0000	323.7000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	2,500.00	500.00	161	358.0000	63.7000
Displacement Final	Displacement	8.3300			0.00			0.0000	228.8000
Top-Out Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59			240	535.0000	95.0000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Lead Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Tail Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-	5.0000	BWOB

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		10		
Tail Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Top-Out Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Top-Out Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Top-Out Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Top-Out Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Top-Out Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Top-Out Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT

TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)	ANNULUS PRESS (psi)	COMMENTS
4/1/2019 2:14:00 PM	Water	5.00	20.00	101.00		
4/1/2019 2:18:00 PM	BJCem S100.3.01D	6.50	324.00	247.00		
4/1/2019 3:23:00 PM	BJCem S100.3.01D	5.50	64.00	173.00		
4/1/2019 3:47:00 PM	Displacement	7.50	216.00	575.00		
4/1/2019 5:24:00 PM	BJCem S100.3.01D	5.50	64.00	173.00		Top-Out

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	101.00	575.00	274.00
Rate (bpm)	5.00	7.50	6.13

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DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	216.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	216.00	Amt of Spacer to Surface	0.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	1.00
Bump Plug Pressure (psi)	1081.00	Total Volume Pumped (bbls)	719.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	None	Lost Circulation During Cement Job	Yes

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BJ Cementing Event Log

Surface - Rifle, CO - Douglas Diaz

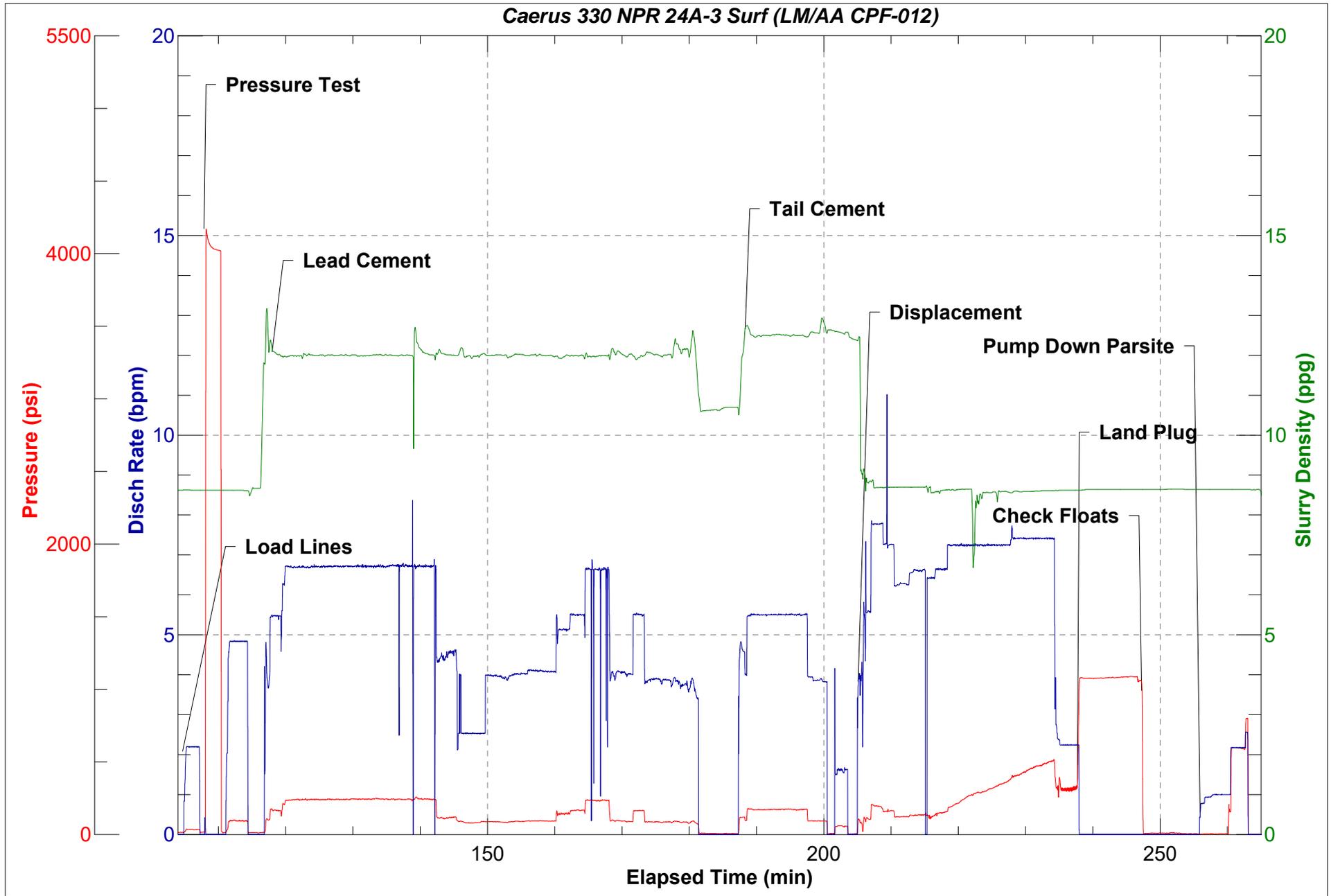
SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	04/01/2019 07:00	Callout					Arrive at yard, prepare for job. RTS 1200
2	04/01/2019 08:45	Depart for Location					Leave Rifle yard for location
3	04/01/2019 10:25	Arrive on Location					Arrive on location rig running casing
4	04/01/2019 10:25	Spot Units					Spot in all equipment
5	04/01/2019 10:45	Rig Up					Pre rig up safety meeting, rig in all equipment and lines
6	04/01/2019 11:30	Rig					Waiting on rig to finish casing
7	04/01/2019 12:30	Rig					Rig starts circulation
8	04/01/2019 12:35	STEACS Briefing					Pre job safety meeting with company man and rig crew
9	04/01/2019 12:45	Rig					Rig finishing circulation, circulated 220 BBLs @ 7 BBLs per min for 30 mins
10	04/01/2019 13:00	Rig					Waiting on rig to blow down
11	04/01/2019 13:45	Rig Up					Rig up cement head
12	04/01/2019 14:07	Prime Up	8.3400	2.50	5.00	36.00	Prime up pump and lines
13	04/01/2019 14:10	Pressure Test				3000.00	Pressure test, pressure held
14	04/01/2019 14:14	Pump Spacer	8.3400	5.00	20.00	101.00	Pump fresh water spacer
15	04/01/2019 14:18	Pump Lead Cement	12.0000	5.00	0.00	174.00	Start pumping lead cement. 12 PPG, 719 SKS, 2.53CUFT/SK, 14.86 GAL/SK FOR A TOTAL OF 324 BBLs OF CEMENT REQUIRING 254 BBLs MIX WATER.
16	04/01/2019 14:18	Pump Lead Cement	12.0000	5.50	50.00	239.00	Pumping lead cement

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
17	04/01/2019 14:28	Pump Lead Cement	12.0000	6.50	100.00	244.00	Pumping lead cement
18	04/01/2019 14:35	Pump Lead Cement	12.0000	6.50	150.00	247.00	Pumping lead cement
19	04/01/2019 14:44	Pump Lead Cement	12.0000	2.50	200.00	84.00	Pumping lead cement
20	04/01/2019 14:55	Pump Lead Cement	12.0000	5.50	250.00	170.00	Pumping lead cement
21	04/01/2019 15:06	Pump Lead Cement	12.0000	5.50	300.00	163.00	Pumping lead cement
22	04/01/2019 15:16	Pump Lead Cement	12.0000	4.50	324.00	119.00	Pumping lead cement
23	04/01/2019 15:23	Pump Tail Cement	12.5000	4.50	0.00	119.00	Start Pumping tail cement. 12.5 PPG, 161 SKS, 2.23CUFT/SK, 12.59GAL/SK FOR A TOTAL OF 64 BBLs OF CEMENT REQUIRING 48 BBLs MIX WATER
24	04/01/2019 15:23	Pump Tail Cement	12.5000	5.50	50.00	173.00	Pumping tail cement
25	04/01/2019 15:39	Pump Tail Cement	12.5000	3.50	64.00	94.00	Pumping tail cement
26	04/01/2019 15:44	Pumping Cement	12.5000	1.50	3.00	61.00	Pumping cement down previous parasite
27	04/01/2019 15:47	Drop Top Plug					Drop top plug verified by company man
28	04/01/2019 15:47	Pump Displacement	8.3400	5.50	0.00	192.00	Pumping displacement
29	04/01/2019 15:47	Pump Displacement	8.3400	6.50	50.00	133.00	Pumping displacement
30	04/01/2019 15:56	Pump Displacement	8.3400	7.00	100.00	232.00	Pumping displacement
31	04/01/2019 16:05	Pump Displacement	8.3400	7.00	150.00	367.00	Pumping displacement
32	04/01/2019 16:10	Pump Displacement	8.3400	7.50	200.00	516.00	Pumping displacement
33	04/01/2019 16:17	Pump Displacement	8.3400	2.00	216.00	575.00	Pumping displacement
34	04/01/2019 16:21	Land Plug				1081.00	Land plug,, FCP 575 PSI Took to 1081 PSI
35	04/01/2019 16:21	Check Floats					Checked floats, floats held 1 BBL bled back
36	04/01/2019 16:33	Other (See comment)	8.3400	1.00	10.00	208.00	Pumped sugar water down parasite line, broke over at 208 PSI
37	04/01/2019 16:45	Rig Up					Rigged up for top out
38	04/01/2019 17:24	Top Out	12.5000	2.50	0.00	104.00	Start pumping top out. 12.5 PPG, 240SKS, 2.23CUFT/SK, 12.59GAL/SK FOR A TOTAL OF 95 BBLs OF CEMENT REQUIRING 72 BBLs OF MIX WATER
39	04/01/2019 17:24	Top Out	12.5000	3.00	50.00	99.00	Pumping top out
40	04/01/2019 17:43	Top Out	12.5000	2.00	95.00	75.00	Pumping top out



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
41	04/01/2019 18:30	Wash Pumps and Lines					Wash pump and lines to 3-sided tank, winterized
42	04/01/2019 19:00	Rig Down					Pre rig down safety meeting, rig down all equipment and lines
43	04/01/2019 19:30	Leave Location					Leave location for Rifle shop







Caerus 330 NPR 24A-3 Topout

